Field of Forel H1

Field H1, is the thalamic fasciculus, a horizontal white matter tract composed of the ansa lenticularis, lenticular fasciculus, and cerebellothalamic tracts between the subthalamus and the thalamus. These fibers are projections to the ventral anterior and ventral lateral thalamus from the basal ganglia (globus pallidus) and the cerebellum. H1 is separated from H2 by the zona incerta.

Two regions within the subthalamus, the posterior subthalamic area(PSA) and fields H1/H2 of Forel, are the revisited stereotactic targets to treat movement disorders. Currently, the PSA is often utilized to treat essential tremors and various types of tremors. Fields H1/H2 of Forel are investigated as a target for magnetic resonance-guided focused ultrasound to treat motor symptoms and motor complications in patients with Parkinson's disease. For the past twenty years, the PPN has been investigated to treat refractory gait freezing and falls in patients with Parkinson's disease. These revisited and novel targets may be utilized as substitutes and complement for the present standard stereotactic targets [1].

A study confirmed significant improvement in Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS) total scores and Burke-Fahn-Marsden Dystonia Rating Scale (BFMDRS), neck scores at the 13.9-month follow-up after unilateral pallidothalamic tractotomy. The pallidothalamic tract in Field of Forel H1 is expected to be an alternative target for cervical dystonia treatment [2] [3].

1)
Toda H, Kambe D, Shima A, Nishida N, Sawamoto N. [Posterior Subthalamic Area, Pallidothalamic Tract, and Pedunculopontine Nucleus:Deep Brain Stimulation Targets for Parkinson's Disease and Essential Tremor]. No Shinkei Geka. 2021 Jul;49(4):820-828. Japanese. doi: 10.11477/mf.1436204460. PMID: 34376614.

2)
Horisawa S, Kohara K, Nonaka T, Fukui A, Mochizuki T, Iijima M, Kawamata T, Taira T. Unilateral pallidothalamic tractotomy at Forel's field H1 for cervical dystonia. Ann Clin Transl Neurol. 2022 Mar 8. doi: 10.1002/acn3.51532. Epub ahead of print. PMID: 35261204.

3)
Horisawa S, Fukui A, Tanaka Y, Wendong L, Yamahata H, Kawamata T, Taira T. Pallidothalamic Tractotomy (Forel's Field H1-tomy) for Dystonia: Preliminary Results. World Neurosurg. 2019 Sep;129:e851-e856. doi: 10.1016/j.wneu.2019.06.055. Epub 2019 Jun 14. PMID: 31207377.